

## THE LAND MOLLUSKS OF MACKINAC ISLAND, MICHIGAN

BY A. F. ARCHER

Mackinac Island is a small island about three miles long and two miles wide located in Mackinac Straits. The southern half is hilly, and on the southeastern corner the hills form steep bluffs above a narrow shore line. The predominating surface rock consists of a pale blue limestone. On the whole the geological conditions are very favorable for mollusks. The southern half of the island is fairly well wooded. The woods are now protected, having been made into a state park. The dominant forest tree is the arborvitae (*Thuja occidentalis*). In a few spots hardwoods, especially oaks, form a distinct association. In the latter areas certain mollusks are common, while in coniferous tracts they are scarce. Many species are common on open grassy slopes where there is no forest cover. These open areas have been created since human occupation served to remove the arborvitae forest that once covered them. Apparently the removal of the conifers has been favorable to the increased abundance of some species. It is well known that snails do not thrive in North American coniferous forests.

The following list is based mainly on a collection made by myself on July 30, 1933. I am indebted to Mr. Calvin Goodrich for supplementing my results with additional information from a former collecting trip which he took to the same locality. The molluscan fauna of this area is mainly boreal, but there are southern species invading the region, although such elements are not yet numerous.

*Euconulus chersinus polygyratus* (Pilsbry). Rather common in hardwood tracts in the interior of the island.

*Retinella electrina* (Gould).

*Retinella indentata* (Say).

*Paravitrea multidentata* (Binney). Found by Goodrich on the guard rails of steps descending from the bluff at Arch Rock on the east side of the island.

*Zonitoides arboreus* (Say). Common in the limestone talus near Fort Mackinac.

*Agriolimax campestris* (Say). Under logs and leaves in the hardwoods.

*Limax maximus* L. Under oak leaves in the cemetery.

*Helicodiscus parallelus* (Say). This species occurs both in the hardwoods under leaves and in the limestone talus near the fort.

*Columella edentula* (Draparnaud). In limestone talus.

*Gonyodiscus cronkhitei catskillensis* (Pilsbry). In limestone talus and in the hardwoods.

*Anguispira alternata* (Say). This species occurs in all habitats, but is especially common in open fields around burdocks, or at the bases of bluffs where there is little forest cover. However, it is one of the few species noticeable in the arborvitae. Near the fort it was found in a nasturtium garden. It is very variable in color. A surprisingly large number of pure albinos are found in this colony. Many pale reddish and very many rufous ones occur. The typically brown colored ones made up only about a third of the total collection. Several rather high spired individuals were also found.

*Polygyra albolabris* (Say). Rather common in the hardwoods judging from the number of dead ones lying around which had been gnawed by rodents. The local race is very large.

*Polygyra fraterna* (Say). A few were found at the base of the bluffs among herbs. They were all unusually large.

*Cochlicopa lubrica* (Müller). Very abundant in the limestone talus.

*Strobilops labyrinthica virgo* (Pilsbry). Common both in the limestone talus and in the hardwoods under leaves.

*Vertigo ventricosa* (Morse). Common in the limestone talus.

*Pupilla muscorum* (Linnaeus). A few in the limestone talus. Goodrich found it abundant on the sides of a well.

*Vallonia costata* (Müller). Common in the limestone talus.

*Philomycus carolinianus* (Bosc). Under leaves and logs in the hardwoods. Only immature specimens were found.

*Succinea ovalis* Say. Found below the bluffs near the East End Cottages. They were large, elongated, and of a pinkish hue.

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TWO NEW RACES AND A NEW SPECIES OF *HELISOMA*  
FROM CALIFORNIA

BY FRANK C. BAKER

*HELISOMA OCCIDENTALE* DEPRESSUM, var. nov.

Shell differing from typical *occidentale* in being of less axial height, the whorls more tightly coiled, three turns visible on the umbilical side, which is less deeply excavated, the body whorl less voluminous. Color greenish horn. Whorls  $4\frac{1}{2}$ .

Height 9.0 mm., diam. 20.0 mm.; aperture height 8.5 mm., diam. 6.7 mm. Holotype 3239.

Height 10.0 mm., diam. 19.5 mm.; aperture height 9.0 mm., diam. 6.6 mm. Paratype 3240.

Height 9.9 mm., diam. 18.5 mm.; aperture height 9.0 mm., diam. 6.0 mm. Paratype 3240.

Height 12.0 mm., diam. 25.0 mm.; aperture height 11.5 mm., diam. 7.9 mm. *Occidentale*.

*Type locality*: Lower Klamath Lake, Oregon and California. Collected by Junius Henderson. *Types*: Baker Coll.: Nos. 3239, 3240.

This race is apparently distributed in Oregon and northern California and has been identified as *occidentalis*, *ammon*, and *binneyi*, from all of which it is quite distinct.

*HELISOMA TENUE* CALIFORNIENSE, var. nov.

Shell differing from typical *tenu*e in its larger size, wider whorls, more depressed and flatter spire whorls, umbilical whorls coiled in same plane, sculpture coarse, the space between the riblets several times the width of the riblets; color usually greenish horn.

Height 10.0 mm., gr. diam. 21.5 mm., less. diam. 17.4 mm.; aperture height 9.0 mm., diam. 6.9 mm. Holotype.

Height 9.6 mm., gr. diam. 18.6 mm., less. diam. 15.3 mm.; aperture height 9.0 mm., diam. 5.4 mm. Paratype.